PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

B00

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 4 : B23P 11/02, B65D 45/32, 88/54 — A1

(11) International Publication Number: WO 88/ 02297

(43) International Publication Date: 7 April 1988 (07.04.88)

(21) International Application Number: PCT/US86/02058

(22) International Filing Date: 30 September 1986 (30.09.86)

(71) Applicant: RISDON CORPORATION [US/US]; One Risdon Street, Naugatuck, CT 06770 (US).

(72) Inventor: VAN BROCKLIN, Owen, F. : 126 Illinois Avenue, Bristol, CT 06010 (US).

(74) Agent: ST. ONGE, Ronald, J.; St. Onge Steward Johnston & Reens, 986 Bedford Street, Stamford, CT 06905 (US).

(81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), LU (European patent), NL (European patent), SE (European patent).

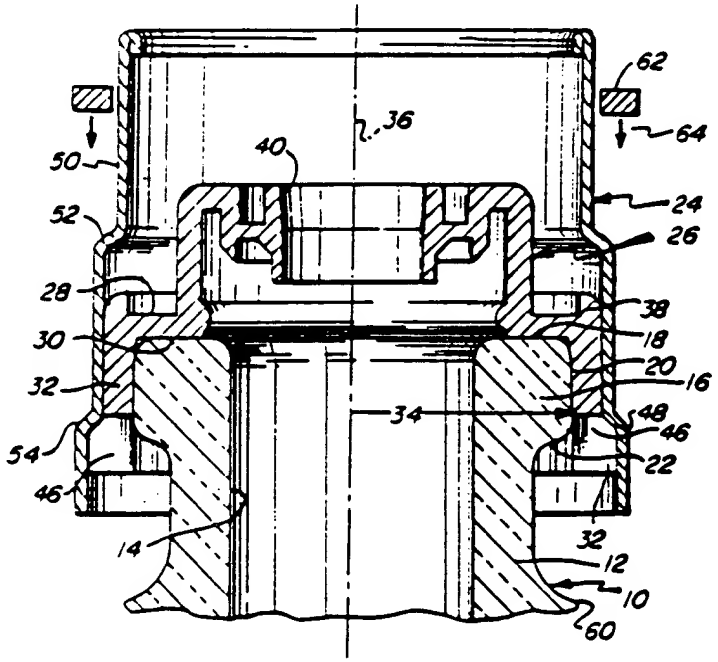
Published
With international search report.

19-49-89 23 990

OE 86 906 194
(290 431)

req exam. 1-10-88
1er mot 29-7-90

(54) Title: AN ASSEMBLY AND METHOD FOR SECURING AND SEALING A DISPENSER TO A FLANGED CONTAINER



(57) Abstract

An assembly for securing and sealing a dispenser, such as a pump or valve, to a flanged container (10). The assembly comprises a mounting cup (24) having a generally cylindrical skirt (50) around its periphery and a sealing collar (26) including a sleeve (32) having a diameter sized to receive the sidewall (20) of the flange (16) and sized to be encased by the mounting cup (24). The end portion of the sleeve (32), preferably a plurality of spaced tabs (46), is in the path of movement of the mounting cup (24) and is deformed radially inwardly beneath the flange ledge (22) thereby to secure the collar (26) to the flange (16).

AN ASSEMBLY AND METHOD FOR SECURING AND SEALING A DISPENSER TO A FLANGED CONTAINER

BACKGROUND OF THE INVENTION

(1) Field of the Invention

The present invention relates to a method and assembly for securing and sealing a dispenser, such as a pump, a valve or other dispensing means with respect to a flanged container. More particularly, the present invention relates to an assembly and method for securing a dispenser to a container without the necessity of complex mechanical operations.

(2) Brief Description of the Prior Art

It is desirable to secure a dispenser such as a pump, a valve, or other dispensing means to a container for storing a liquid product. A typical container may be made of glass and have a neck with an opening for dispensing the product. A flange is included around the opening and has an inwardly directed ledge.

An assembly in accordance with the invention can be used with a pump of the type disclosed in U.S. Patent 4,173,297 to Pettersen. The Pettersen patent discloses a pump that is mounted with respect to the container through use of a metal mounting ferrule, also termed a mounting cup. The bottom of the skirt of the mounting cup is deformed beneath the container flange to retain the pump and associated seal in place. Such crimping operation requires specialized

SUMMARY OF THE INVENTION

In accordance with one aspect of the invention, an assembly for securing and sealing a dispenser, such as a pump or a valve, to a flanged container is disclosed. The assembly comprises a mounting cup comprising a substantially rigid material, such as, for example, metal wherein the cup has a skirt around its periphery. The cup slidable through a path of movement over the container flange to an assembled position.

The assembly also includes a sealing collar comprising a deformable material, preferrably a resilient deformable material. The collar has a ring including a floor that is in contact with the upper surface of the flange in the assembled position. The collar includes a sleeve depending from the ring wherein the sleeve has a diameter sized to receive the sidewall of the flange, but also is sized to be encased by the mounting cup skirt. The sleeve includes an end portion protruding in the path of movement of the skirt. When the sealing collar and mounting cup are assembled, the sleeve forces the protrusion inwardly to a position beneath the flange of the container thereby securing the collar to the flange.

In accordance with one aspect of the invention, at least a portion of the sleeve is tapered, and preferrably frustoconical, in shape wherein the upper region of the frustoconical sleeve has a diameter less than the flange diameter. The lower region of the frustoconical sleeve has a diameter equal or greater than the flange diameter. When the frustoconical sleeve is forced over the flange, it deforms slightly and provides an annular area of contact, which seals the collar.

In accordance with one aspect of the invention, the container flange, the mounting cup and the sealing collar are all symmetric to a central axis. During assembly of the components, the axes of the mounting cap, the sealing collar

simplified assembly is important. In many applications, the person filling the bottles may not have access to sophisticated machinery for crimping, and therefore, a device which permits ease in assembly is particularly desirable. In addition, the mounting cup does not require crimping. Thus, the appearance of the bottom of the mounting cup is attractive and an additional appearance sleeve is unnecessary. Additional advantages of an assembly and method in accordance with the invention will be apparent from the brief description of the drawings and a detailed description of the invention which follows.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional view taken along the common axis of the components of the assembly, and shows the components prior to assembly;

FIG. 2 is a view similar to that shown in FIG. 1 with the exception that the components have been assembled;

FIG. 3 is a top view of the sealing collar shown in FIGS. 1-2;

FIG. 4 is the bottom view of the sealing collar shown in FIGS. 1-3;

FIG. 5 is a side view partially broken away of the sealing collar shown in FIGS. 1-4;

FIG. 6 is a partial sectional view of another embodiment of the invention prior to assembly; and

FIG. 7 is a view similar to that of FIG. 6 after assembly.

DETAILED DESCRIPTION OF THE INVENTION

Referring to Figures 1 and 2, a container 10 of the type having a neck 12 with an opening 14 for dispensing product stored in the container as shown. The neck includes a flange 16 which includes an upper surface 18 surrounding the

mounting cup 24. More specifically, the sleeve includes a plurality of slots 44 about its periphery. The slots 44 define a plurality of deformable tabs 46. It is preferred that the tabs 46 include an inclined camming surface 48 (See FIG. 5). When the sleeve moves downwardly it contacts camming surface 48 and forces each of the tabs radially inwardly. The camming surface preferably has an angle with respect to the vertical axis 36 of between 30 and 60 degrees, most preferably 45 degrees. It is preferable that the sealing collar be of a molded polymeric material which can be formed in a single piece. Alternatively, if necessary, the collar could be formed in a plurality of pieces so long as the tabs 46 are deformable.

As shown particularly well in Figure 5, the sleeve 32 also includes a frustoconical portion 33. The upper region 35 has a diameter less than the diameter of the flange while the lower region 37 has a diameter equal to or greater than the flange diameter. As shown in Figure 2, when assembled, the frustoconical portion deforms slightly and contacts the flange to provide an annular area 39 of contact.

Referring to Figures 1 and 2, the mounting cup 24 will now be described in detail. The mounting cup is preferably made of a material which is substantially rigid, such as metal, hard plastic, wood or glass. The cup 24 includes a skirt 50 which has a shape symmetric with respect to common axis 36. More specifically, the mounting cup has a generally cylindrical shape, but may also have a frustoconical shape symmetric with respect to central axis 36. The skirt 50 includes a first stepped portion 52 and a second stepped portion 54. Both steps 52 and 54 are directed radially outwardly from central axis 36 so that the entire cup can be placed over both the sealing collar and the container flange. The inner diameter 56 of the portion of the cup between steps 52 and 54 is approximately equal to the outer diameter of sleeve 32. If desired, the inner diameter 56 of the cup can be slightly less than the

wardly. The stepped portion 54 contacts the camming surface 48 and exerts a downward force on the entire sealing collar. In the instance where the ring 28 is spaced from the flange 16 in an initial condition, the force of the step 54 against the camming surface 48 urges the entire sealing collar axially downwardly. During movement of the sealing collar with respect to the flange, the tabs 46 are blocked from radially inward movement until they reach the position shown in Figure 2. The collar ring 28 when it contacts the upper surface of the flange limits further movement of the collar with respect to the flange. Thereafter, as the mounting cup 24 is forced axially downwardly by the annular ring 62, the step 54 urges the camming surface radially inwardly and thus deforms the tabs to the position shown in Figure 2.

The method of assembly has been described with the annular ring 62 moving with respect to a stationary container. It should be understood that it is the relative movement which produces the assembly of the various components, and it is also possible to move the container and the various components upwardly with respect to an annular ring.

Referring to Figures 6 and 7, another embodiment of the invention is shown. The container and sealing collar are identical to those shown in Figures 1-5. The mounting cup 68 includes an annular retaining ring 70 which protrudes radially inwardly beneath the deformed tabs 46 when in an assembled position. More specifically, the mounting cup 68 is made of a plastic material having a small degree of flexibility which permits it to slightly deform radially outwardly as it rides over sleeve 32. When tabs 46 are deformed, retaining ring 70 snaps into the position shown in Figure 7 beneath deformed tabs 46. The snap-lock provided by ring 70 assists in maintaining the various components in assembly.

As can be appreciated, the method of assembly is particularly simple and does not require complicated ma-

Claims:

1. An assembly for securing and sealing a dispenser with respect to a container of the type having a neck with an opening for dispensing product, the neck having a flange including an upper surface surrounding the opening, a sidewall about its periphery and an inwardly directed ledge at the bottom thereof, the assembly comprising:

a mounting cup comprising a substantially rigid material, said cup having a skirt around its periphery, said cup slidable through a path of movement over said container flange to an assembled position;

a sealing collar comprising a deformable material, said collar having a ring including a floor, said floor being in contact with said flange upper surface in said assembled position, said collar including a sleeve depending from said ring and having a diameter sized to receive said flange sidewall and sized to be encased by said mounting cup skirt, said sleeve including means protruding in said path of movement of said mounting cup for securing and sealing said collar with respect to said container flange, said means deforming under said ledge as said mounting cup moves to said assembled position, said mounting cup skirt including means for forcing said ring toward said container flange and for maintaining said floor of said ring in contact with said flange upper surface in said assembled position to thereby maintain said flange between said floor and said securing means.

2. An assembly for securing and sealing a dispenser with respect to a container of the type having a neck with an opening for dispensing product, the neck having a generally circular flange symmetric to an axis, said flange including an upper surface surrounding the opening, a sidewall about periphery and an inwardly directed ledge at the bottom thereof, the assembly comprising:

said collar sleeve, said ring returning to its undeformed condition beneath said deformed end portion of said collar to maintain said collar and mounting cup in said assembled position.

5. An assembly according to claim 4 wherein said mounting cup comprises a hard plastic material and said collar comprises a soft plastic material.

6. An assembly according to claim 3 wherein said flange sidewall has an outer diameter substantially equal to the inner diameter of said sealing collar sleeve to provide a tight frictional fit between said sleeve and said flange sidewall in said assembled position.

7. An assembly according to claim 2 wherein said sleeve includes a frustoconical portion having an upper region having a diameter less than said flange diameter and having a lower portion having a diameter at least equal to said flange diameter, said frustoconical portion deforming and being in contact with said flange sidewall in an annular area.

8. An assembly according to claim 2 wherein said end portion of said sleeve includes a plurality of slots about its periphery, said slots defining a plurality of deformable tabs about the periphery of the end portion of said sleeve, said tabs being deformed as said mounting cups moves through its path of movement.

9. An assembly according to claim 2 wherein said end portion of said sleeve includes a camming surface in said path of movement of said mounting cup, said camming surface being forced radially inwardly by said sleeve to position said end portion beneath said edge.

13. An assembly according to claim 12 wherein said tapered portion has a frustoconical shape.

14. An assembly according to claim 10 wherein said skirt has an annular retaining ring projecting inwardly from said skirt, said retaining ring and skirt adjacent said retaining ring deforming outwardly as said retaining ring slides over said collar sleeve, said ring returning to its undeformed condition beneath said deformed end portion of said collar to maintain said collar and mounting cup in said assembled position.

15. An assembly for securing and sealing a dispenser with respect to a container of the type having a neck with an opening for dispensing product, the neck having a flange including an upper surface surrounding the opening, a sidewall about periphery and an inwardly directed ledge at the bottom thereof, the assembly comprising:

a mounting cup comprising a substantially rigid material, said cup having a skirt around its periphery, said cup slidable through a path of movement over said container flange to an assembled position;

a sealing collar comprising a deformable material, said collar including a sleeve having a diameter sized to receive said flange sidewall and sized to be encased by said mounting cup skirt, said sleeve having a tapered portion, said tapered portion having a diameter less than the diameter of said flange sidewall, said tapered portion contacting said flange sidewall and deforming to seat said collar on said flange, and said assembly including means for maintaining said sleeve in said assembled position and against relative movement with respect to said flange.

16. An assembly according to claim 11 wherein said maintaining means comprises means protruding from said sleeve in said path of movement of said mounting cup for secuing and sealing said collar with respect to said con-

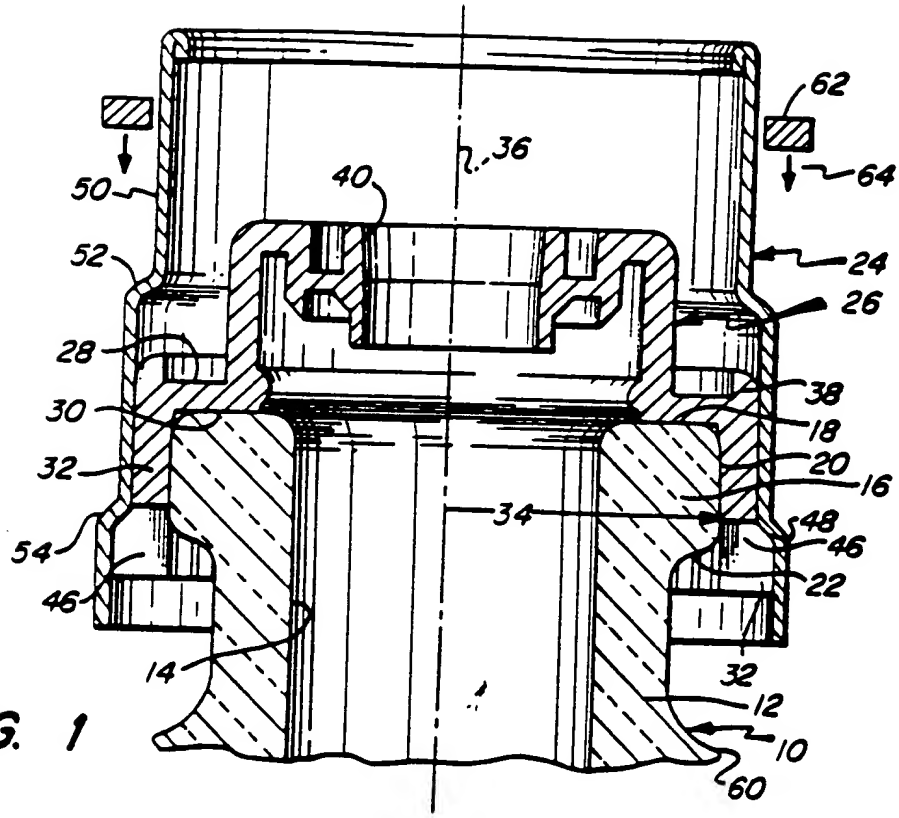

62
64
36
40
50
52
24
26
28
38
30
18
20
16
32
34
48
54
46
46
22
14
32
12
10
60

FIG. 1

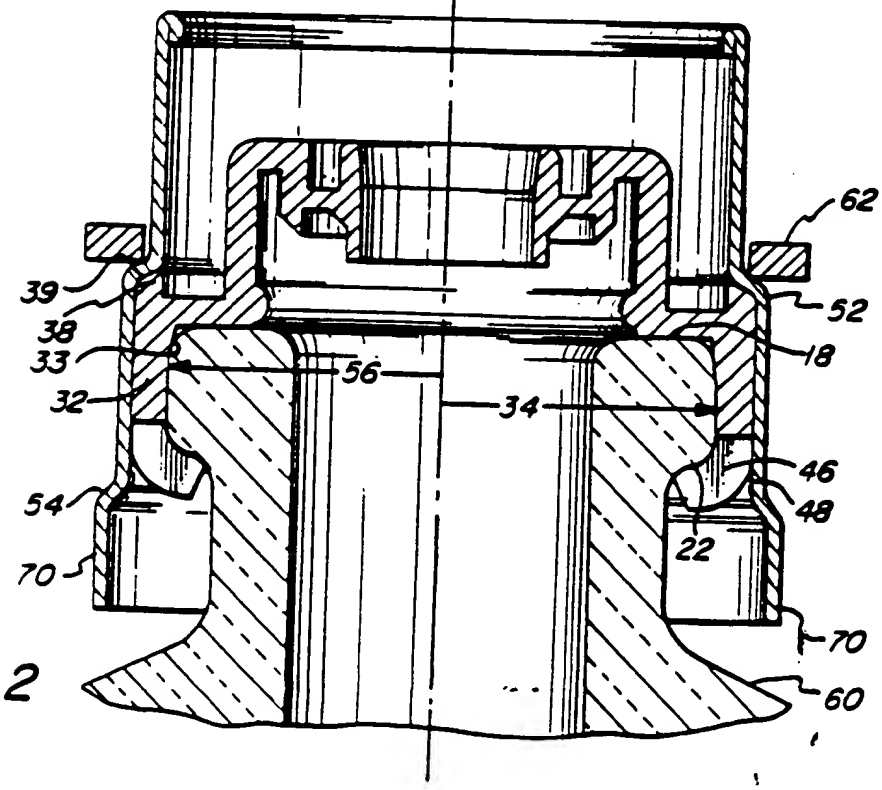

62
39
52
38
18
33
56
32
34
46
54
48
22
70
70
60

FIG. 2

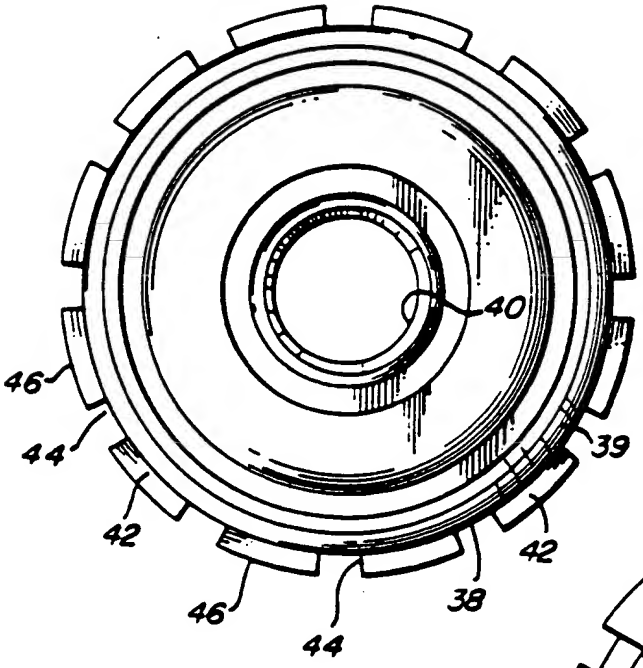


FIG. 3

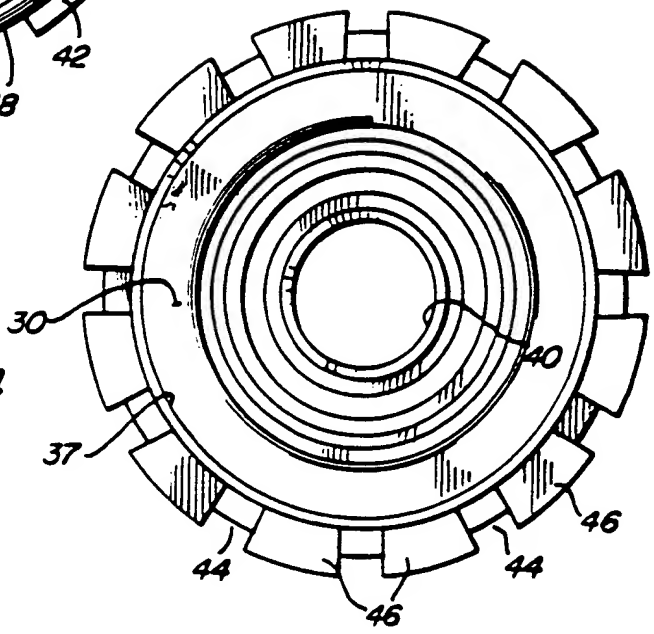


FIG. 4

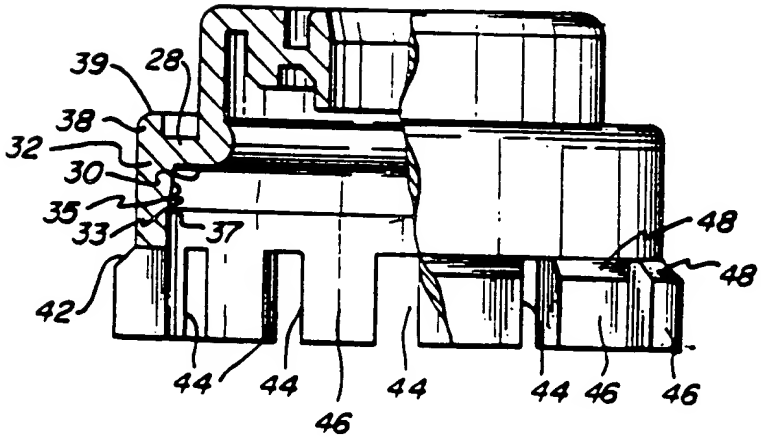


FIG. 5

FIG. 6

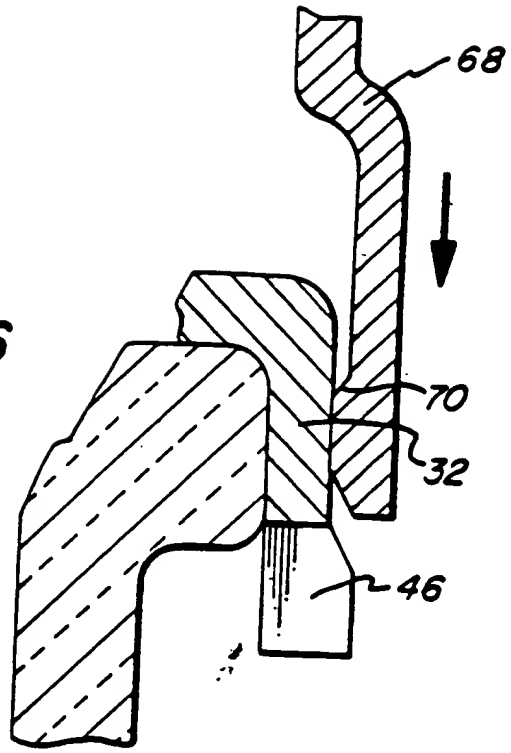
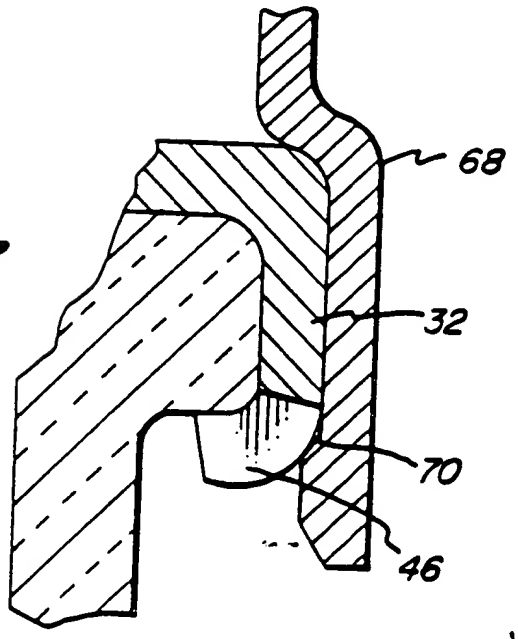


FIG. 7



INTERNATIONAL SEARCH REPORT

International Application No PCT/US86/02058

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) 3

According to International Patent Classification (IPC) or to both National Classification and IPC

Int. Cl.[4] B23P 11/02 B65D 45/32 B65D 88/54
U.S. Cl. 29-451 215-272 222-321

II. FIELDS SEARCHED

Minimum Documentation Searched 4

Classification System	Classification Symbols
U.S.	29-450, 451 215-272, 273, 274 222-321, 545, 562, 568, 570

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched 5

III. DOCUMENTS CONSIDERED TO BE RELEVANT 14

Category *	Citation of Document, 16 with indication, where appropriate, of the relevant passages 17	Relevant to Claim No. 18
X Y	US, A, 1,609,453 (Atwood) 07 December 1926 See entire document.	1-3,6-17 4,5
X Y	US, A, 4,073,398 (Schultz) 14 February 1978 See entire document.	1,10-17 2-9
X Y	US, A, 2,723,773 (Greene) 15 November 1955 See Figures 1-14.	1,10-17 2-9
X Y	FR, A, 2,534,557 (Perne et al) 20 April 1984 See Figures 1-3.	1,10-17 2-9
X Y	DE, A, 2,708,530 (Rolf) 31 August 1978 See Figures 1-3.	1,10-17 2-9
A	US, A, 4,251,003 (Bodenmann) 17 February 1981 (Figures 1-6).	
A	US, A, 4,279,353 (Honma) 21 July 1981 (Figures 1, 2, 5 and 6)	
A	US, A 4,359,166 (Dubach) 16 November 1982 (Figures 1-3).	

* Special categories of cited documents: 15

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search 3	Date of Mailing of this International Search Report 9
04 December 1986	23 DEC 1986
International Searching Authority 1	**Signature of Authorized Officer 10**
ISA/U.S.	Charlie T. Moon Charlie T. Moon

Form PCT/ISA/210 (second sheet) (May 1986)